

FIG.1

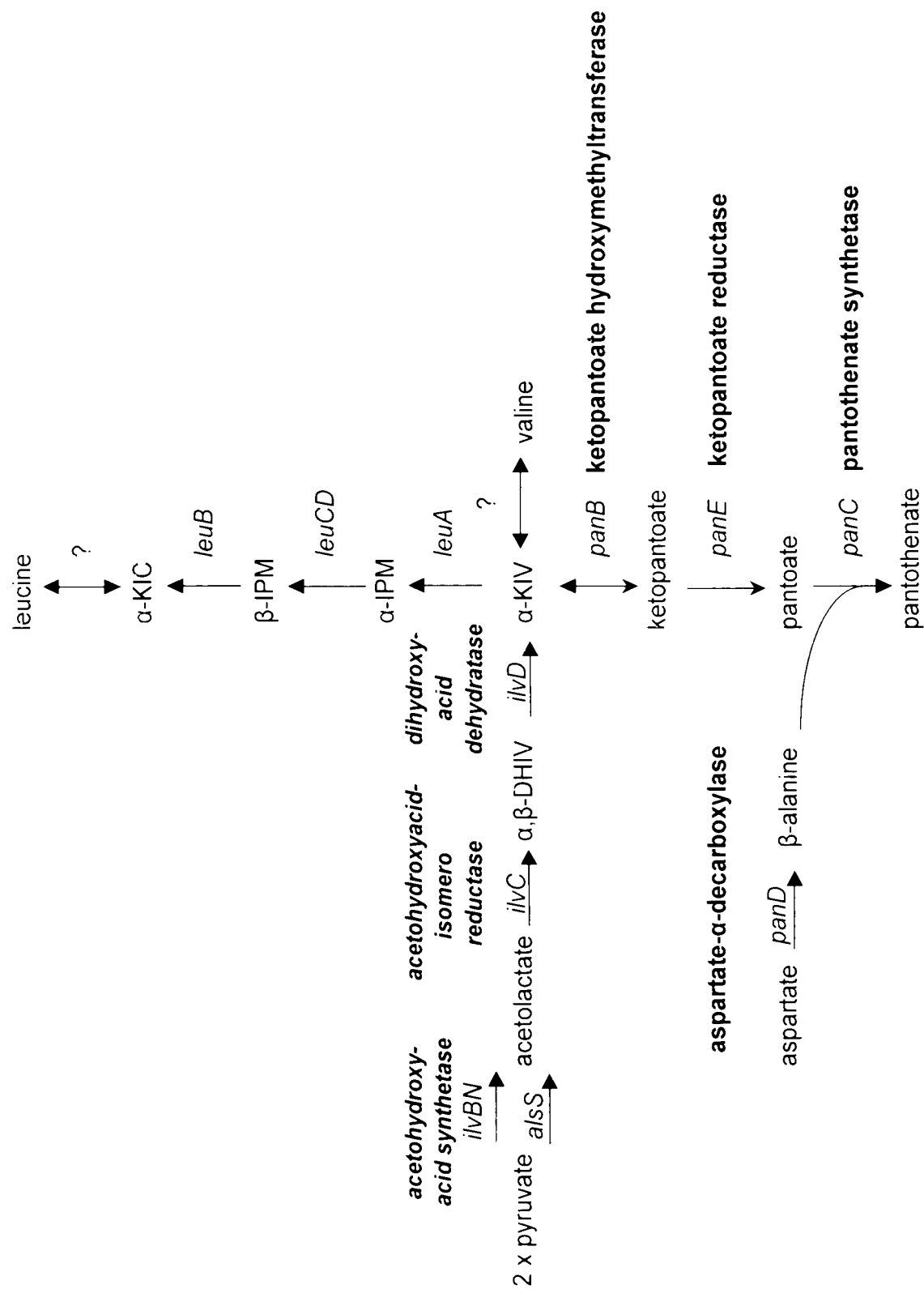


Figure 2. Plasmid pAN240, containing sequences ligated upstream of the P₂₆panBCD cassette, equivalent to the integrated version in strain PA221.

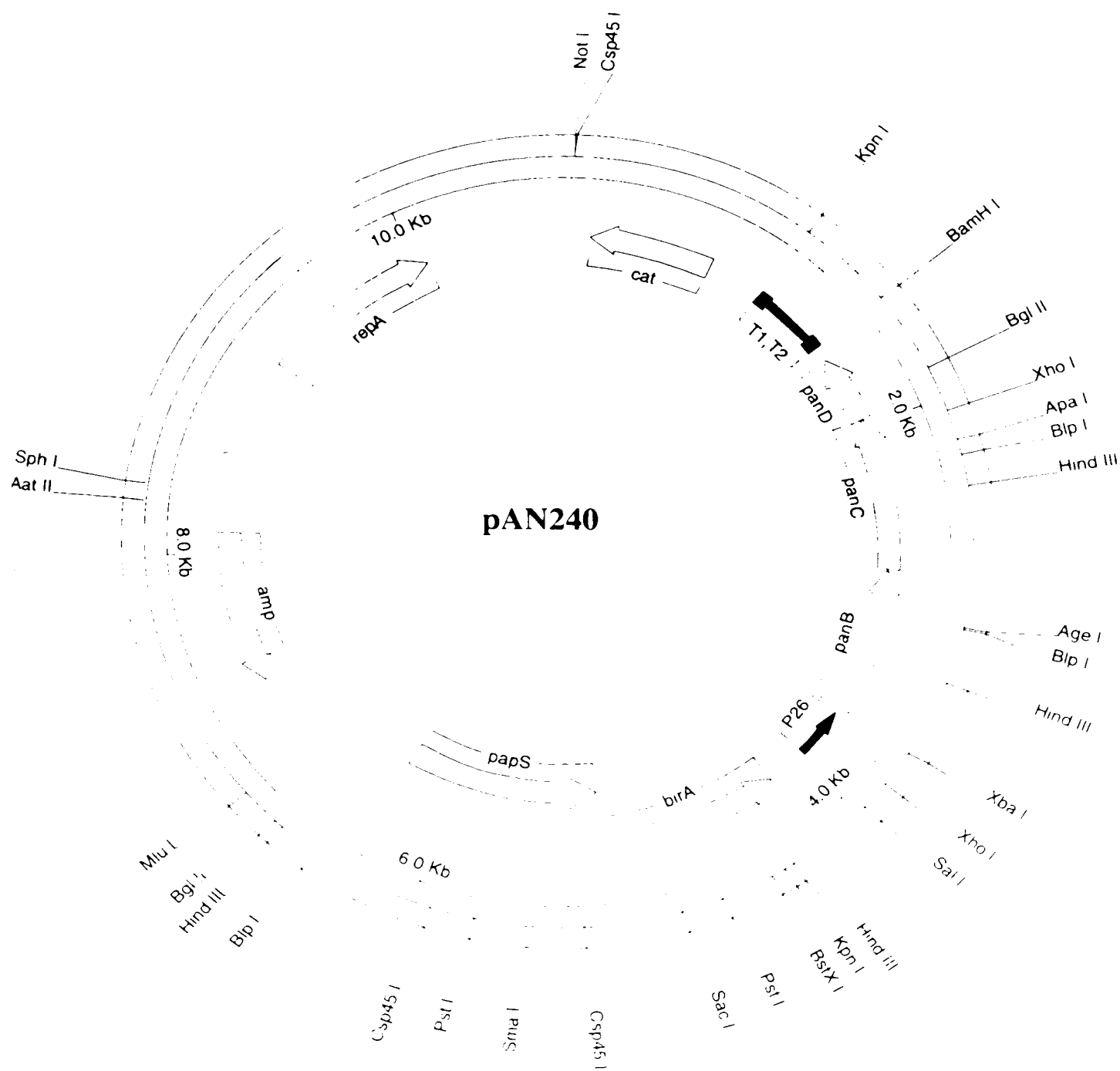


Figure 3A Plasmid pAN004, containing the panBCD operon expressed from P26 and RBS1.

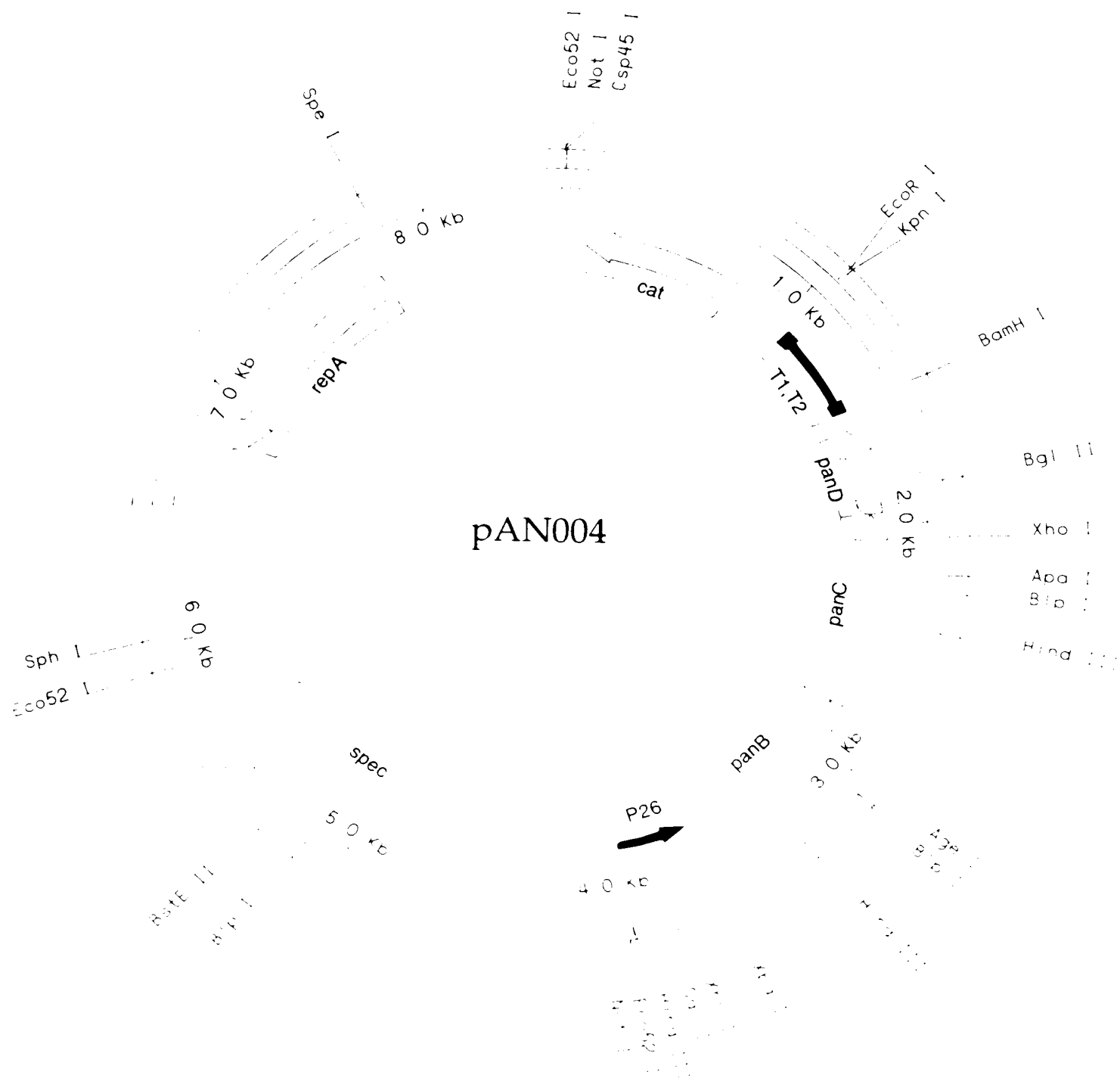


Figure 3 Plasmid pAN006, containing the panBCD operon expressed from P26 and RBS2.

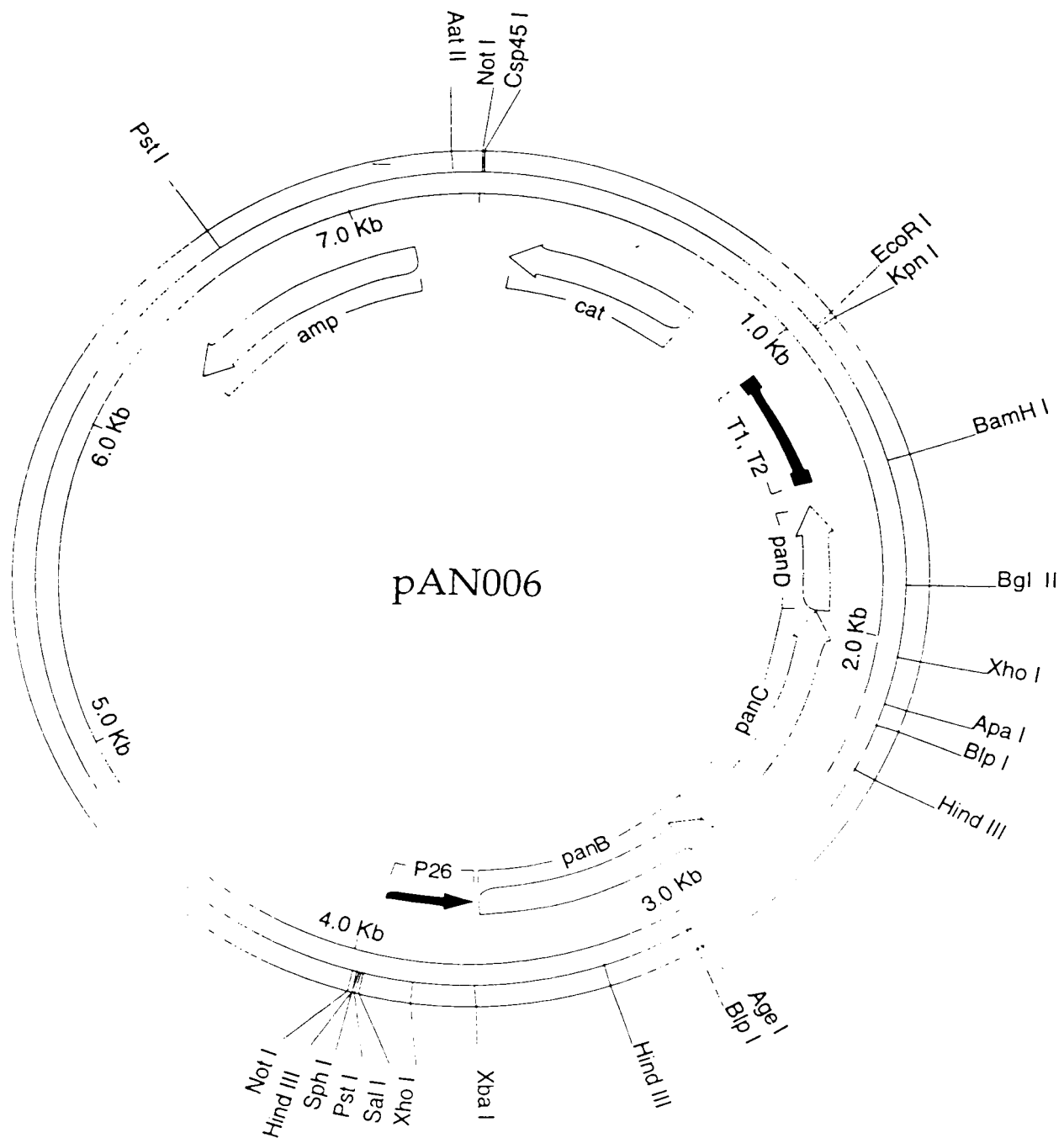


Figure 4 Plasmid pAN236, containing an integratable and amplifiable P26-RBS2-panE1 expression cassette.

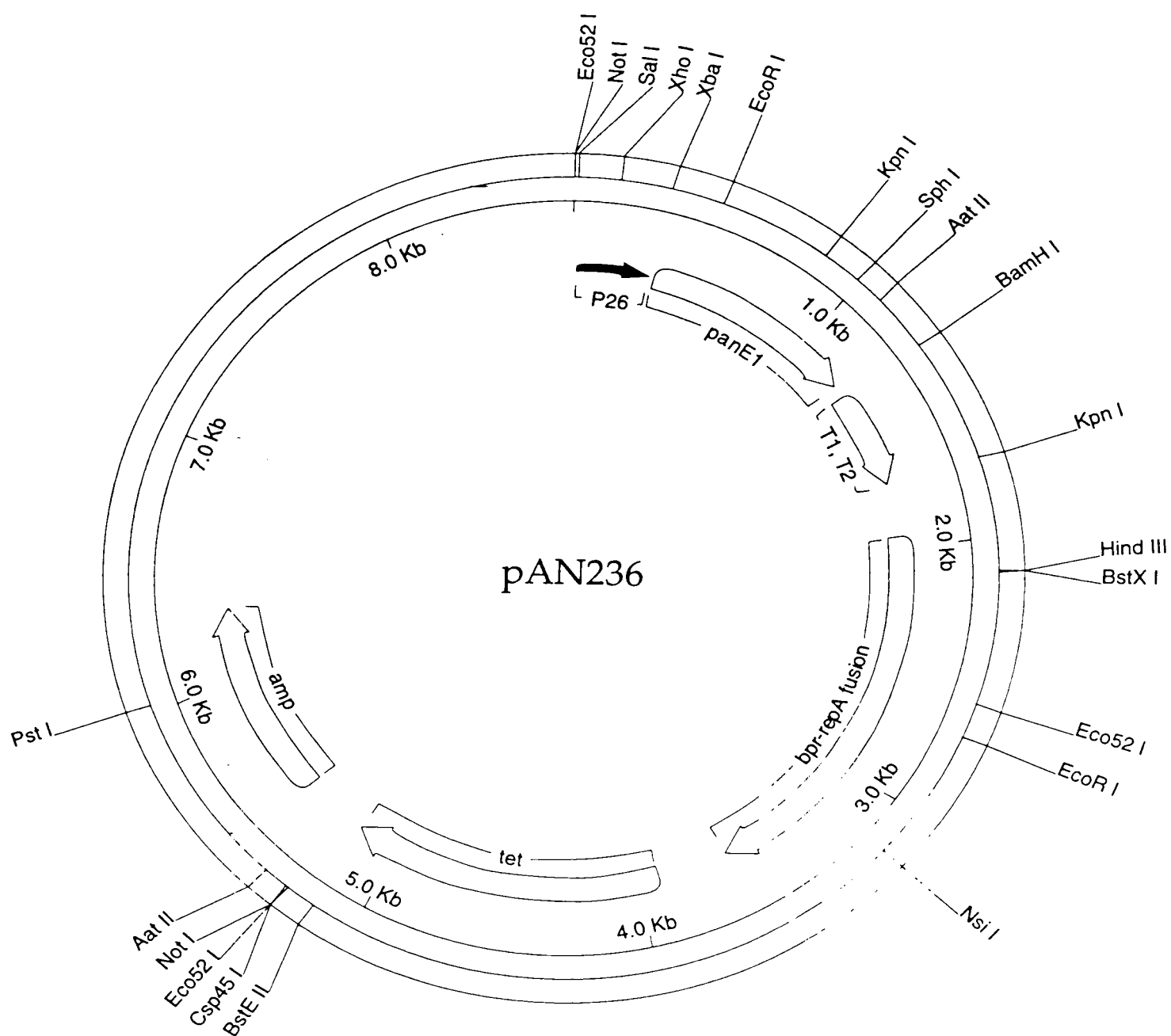


Figure 5 Construction of pAN423

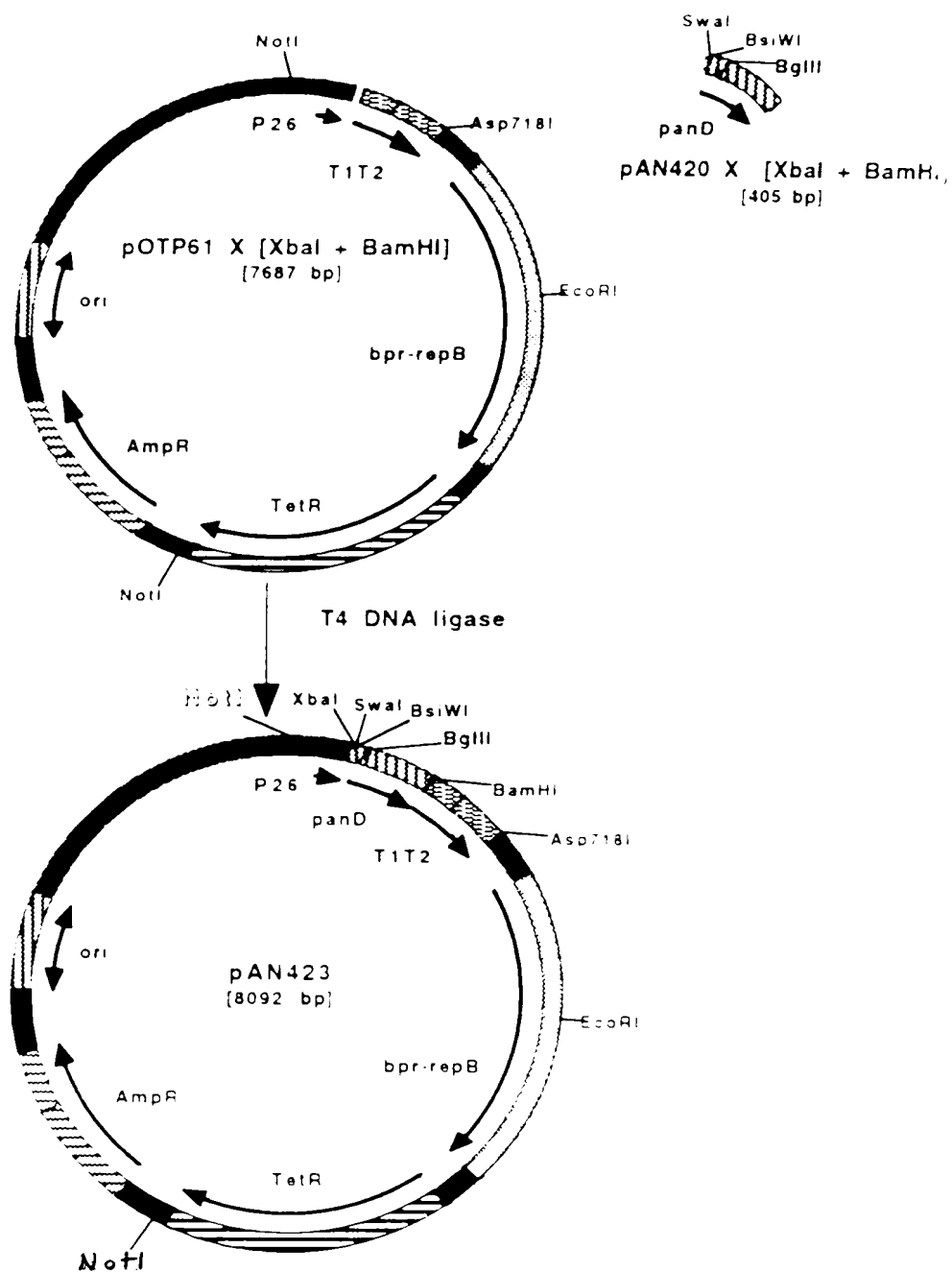


Figure 6 Construction of pAN426 and pAN427.

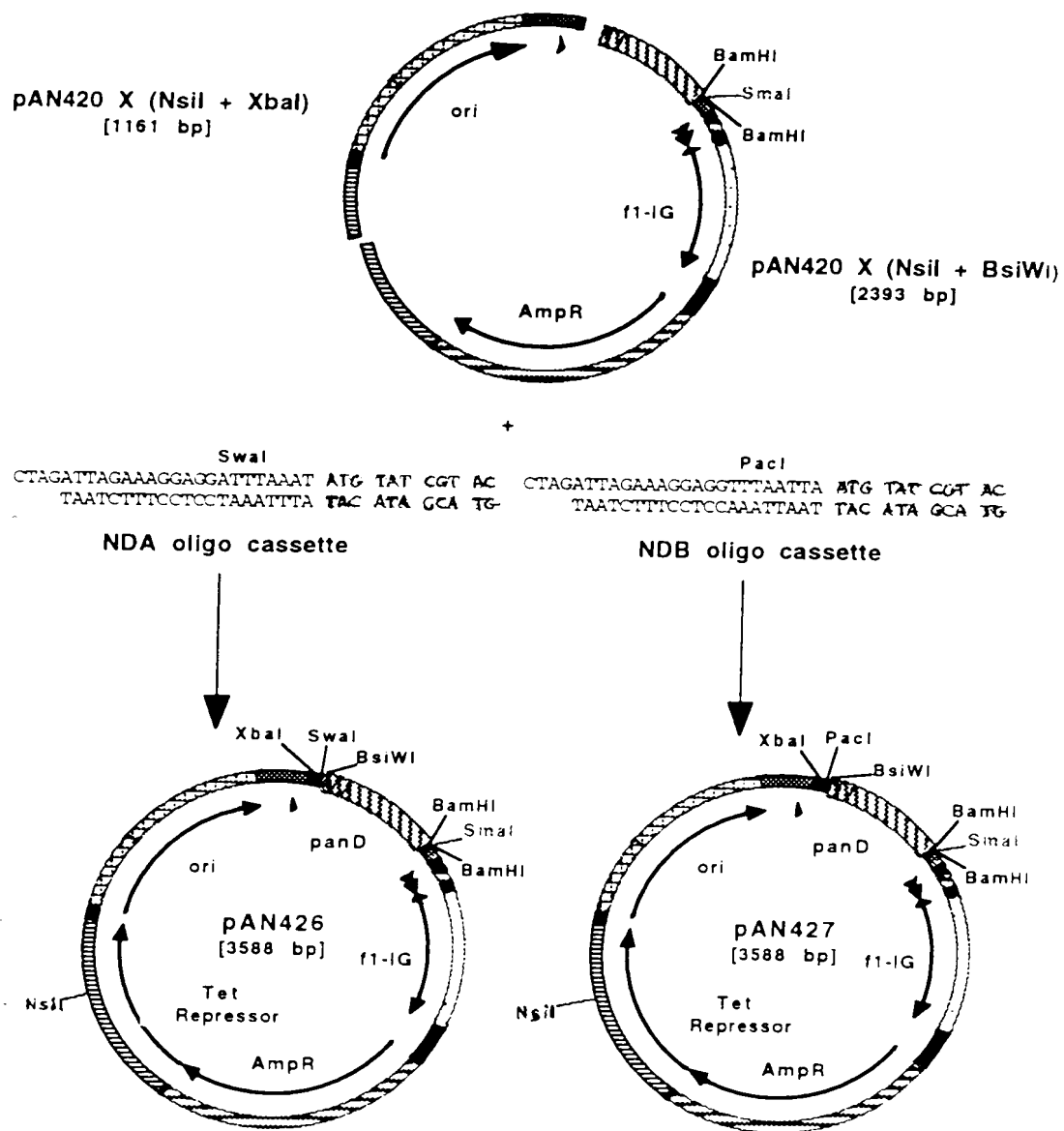


Figure 7 Construction of pAN428 and pAN429.

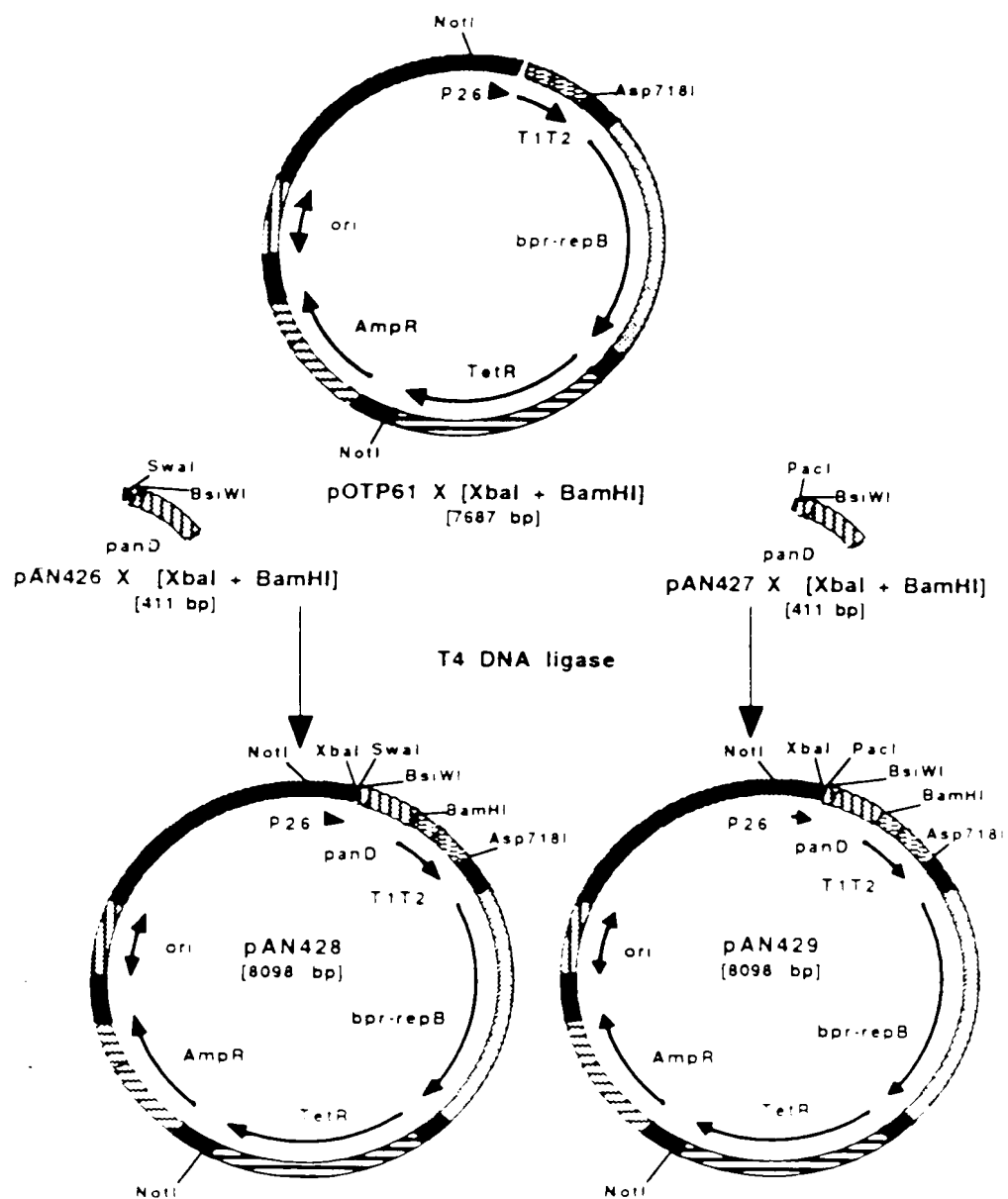


Figure 8. Construction of pAN431.

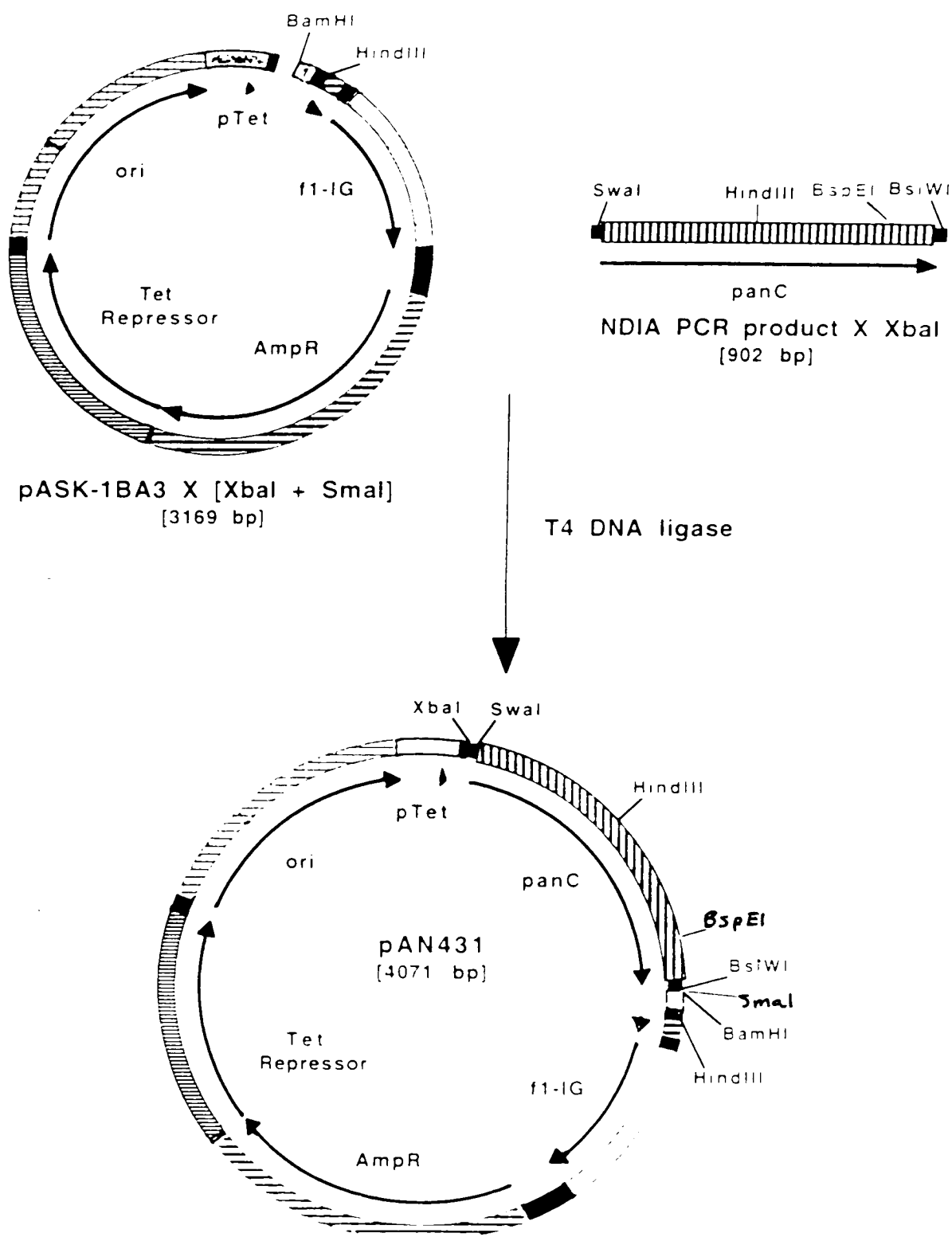


Figure 9. Construction of pAN441.

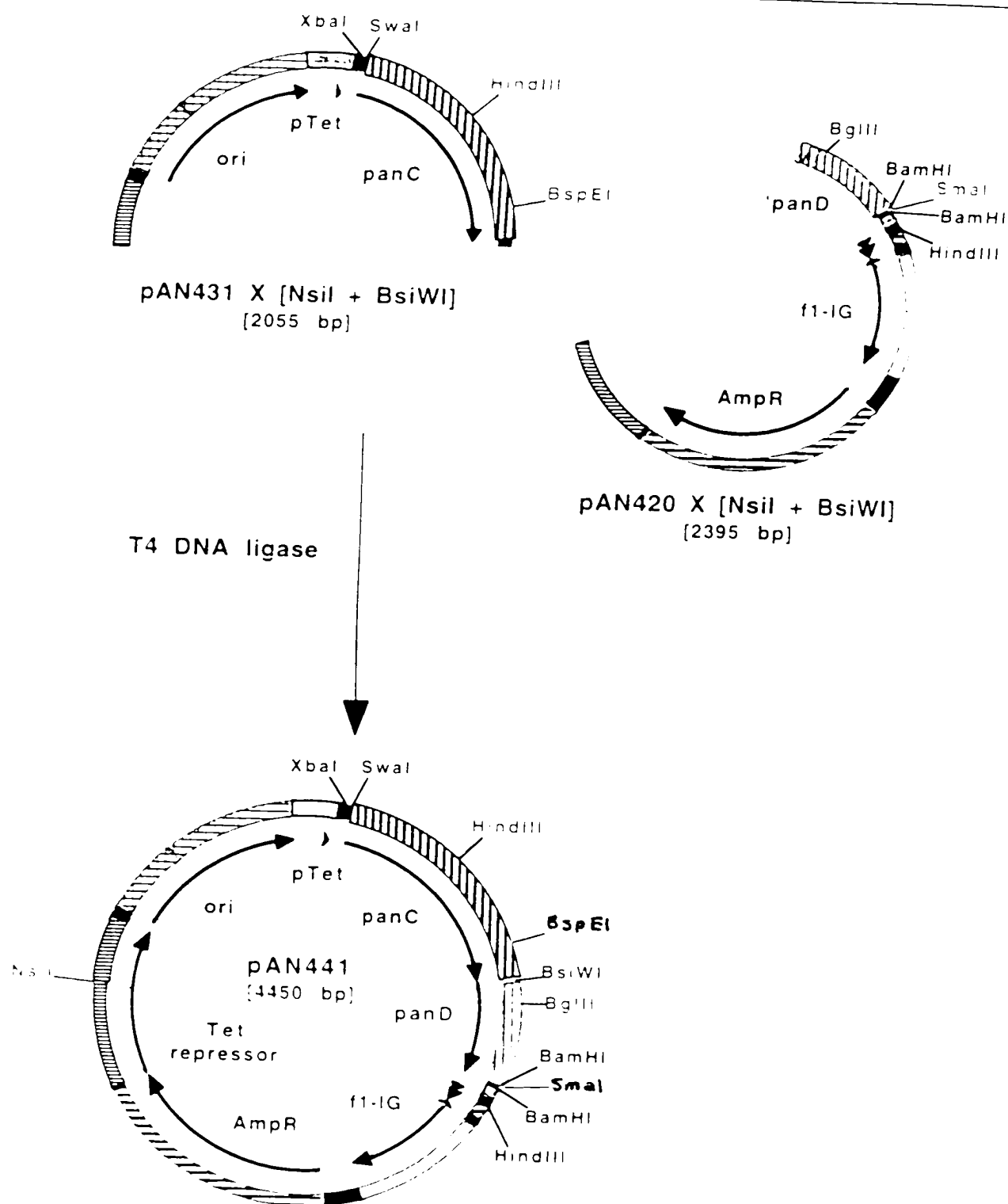


Figure 10. Construction of pAN440.

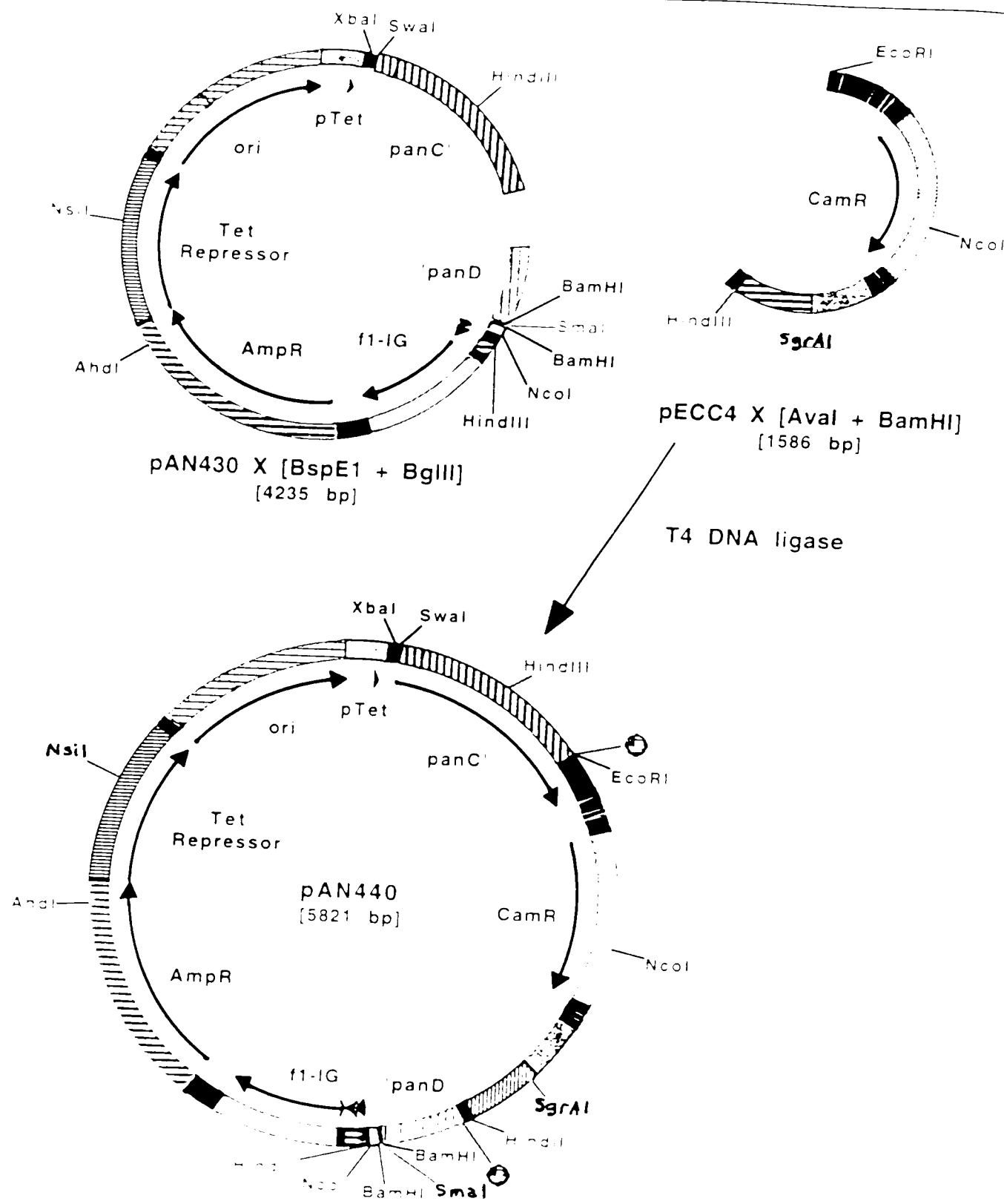


Figure 11 Structure of pAN251, a plasmid designed to integrate a single copy of P₂₆ panE1 at the panE1 locus by double crossover.

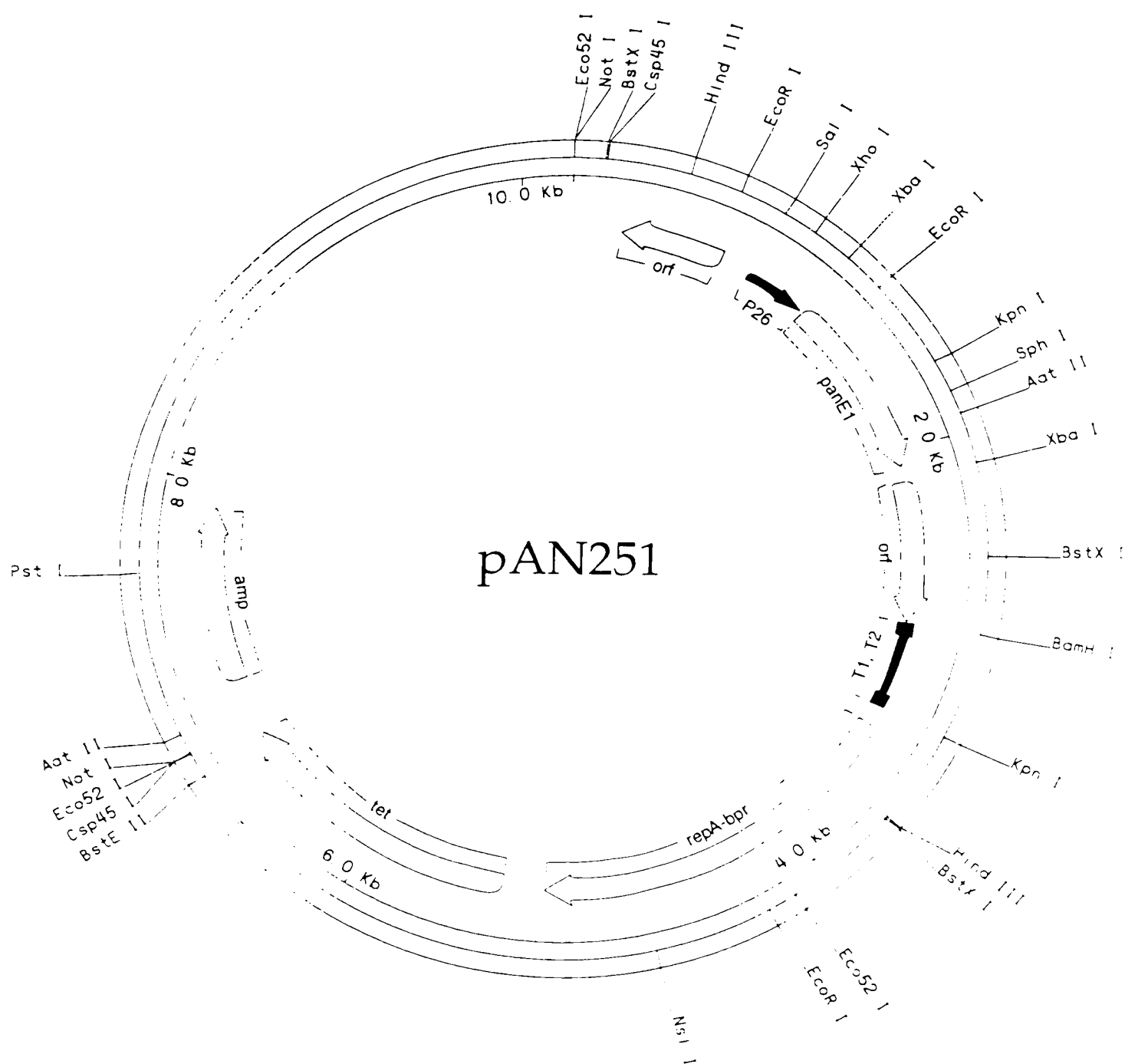


Figure 12. Structure of pAN267, a plasmid designed to stably integrate a P₂₆ ilvBNC cassette at the amyE locus.

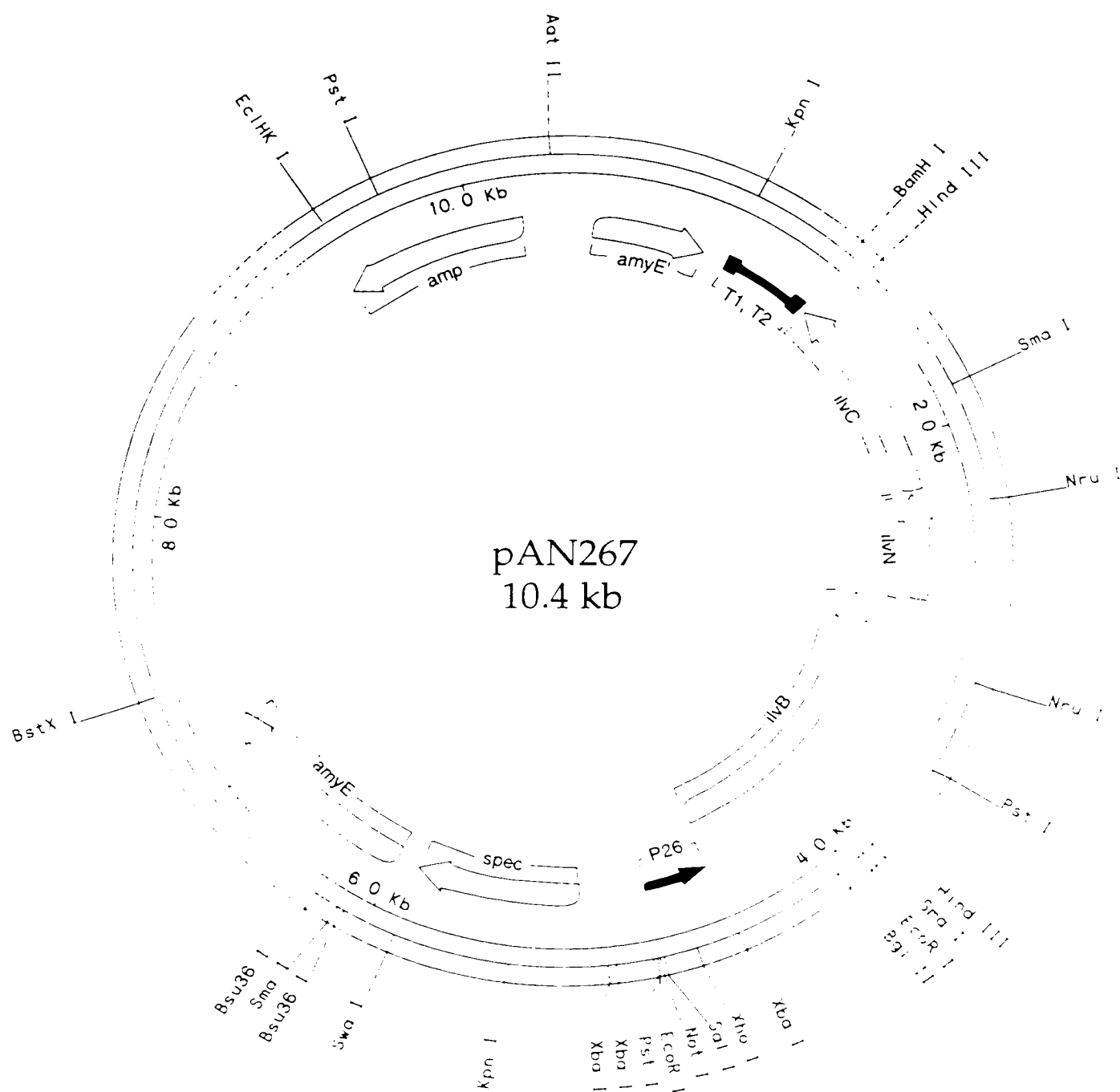


Figure 13 Structure of pAN257, a clone of *B. subtilis* *ilvD* in a low copy vector.

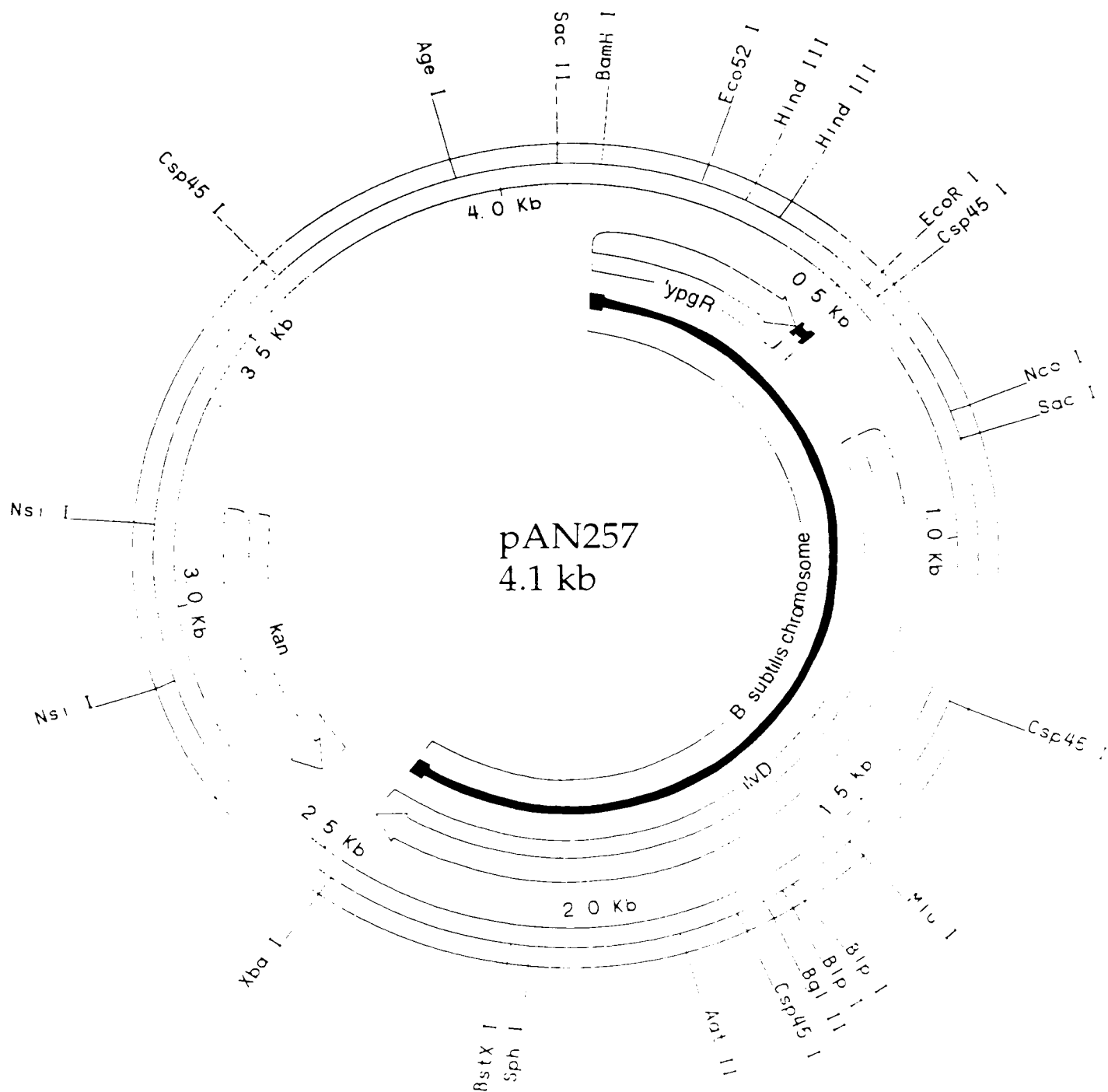


Figure 14 Structure of pAN263, designed to stably integrate a single copy of P₂₆ ilvD at the ilvD locus.

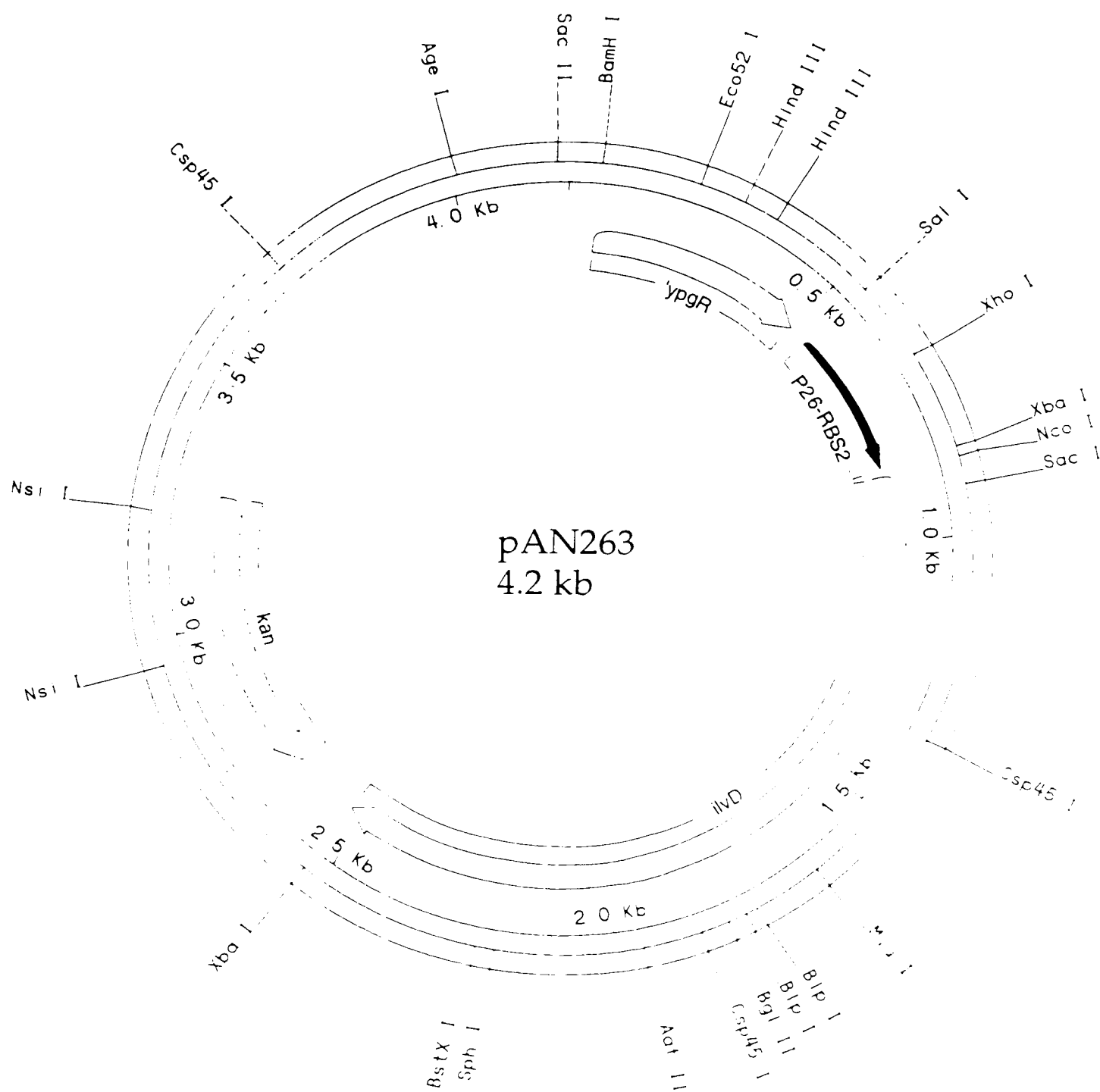


Figure 15 Structure of pAN261, designed to disrupt the *B. subtilis* *ilvD* gene with the *cat* gene.

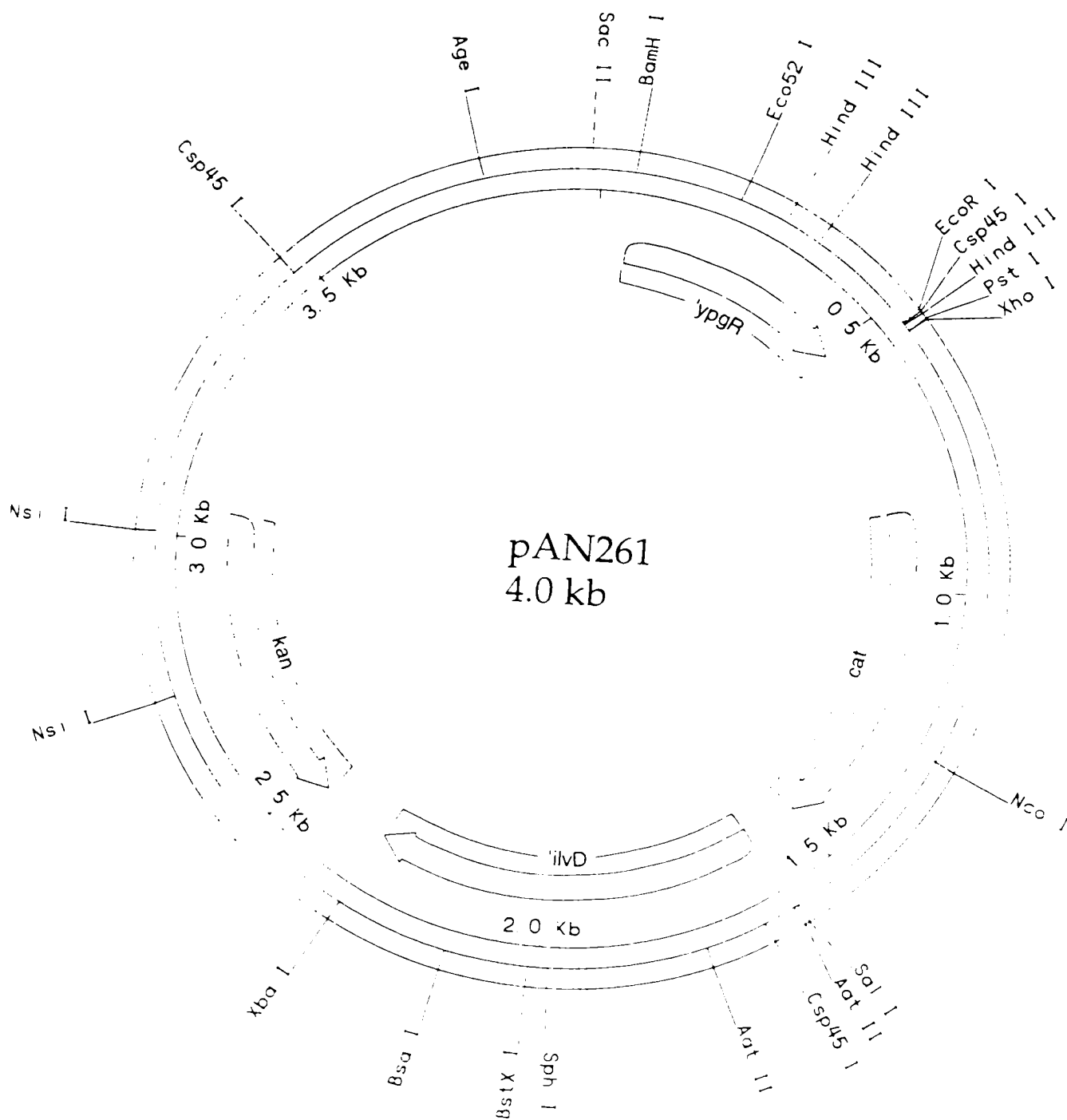


Figure 16

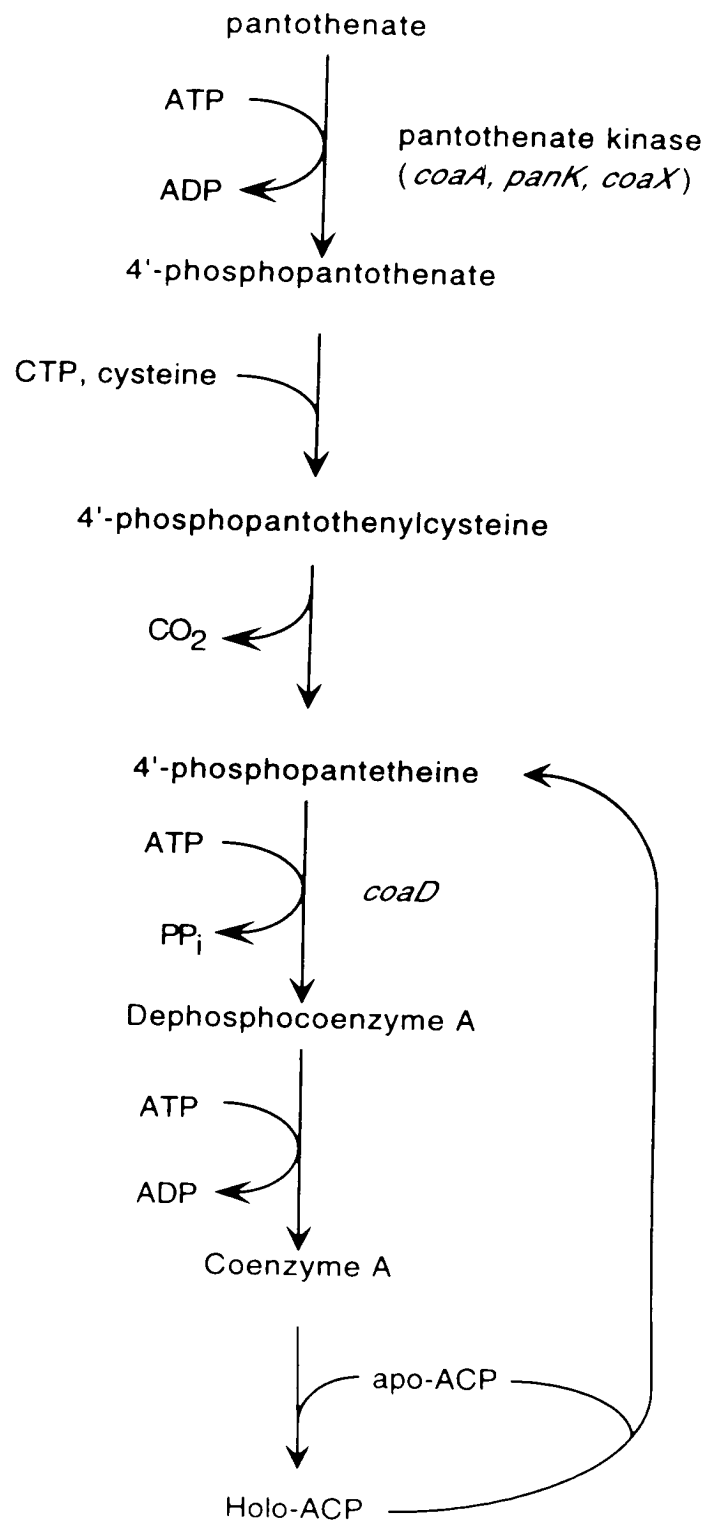


Figure 17 Structure of pAN296, designed to delete most of the *B. subtilis* *coaA* gene and substitute a chloramphenicol resistance gene.

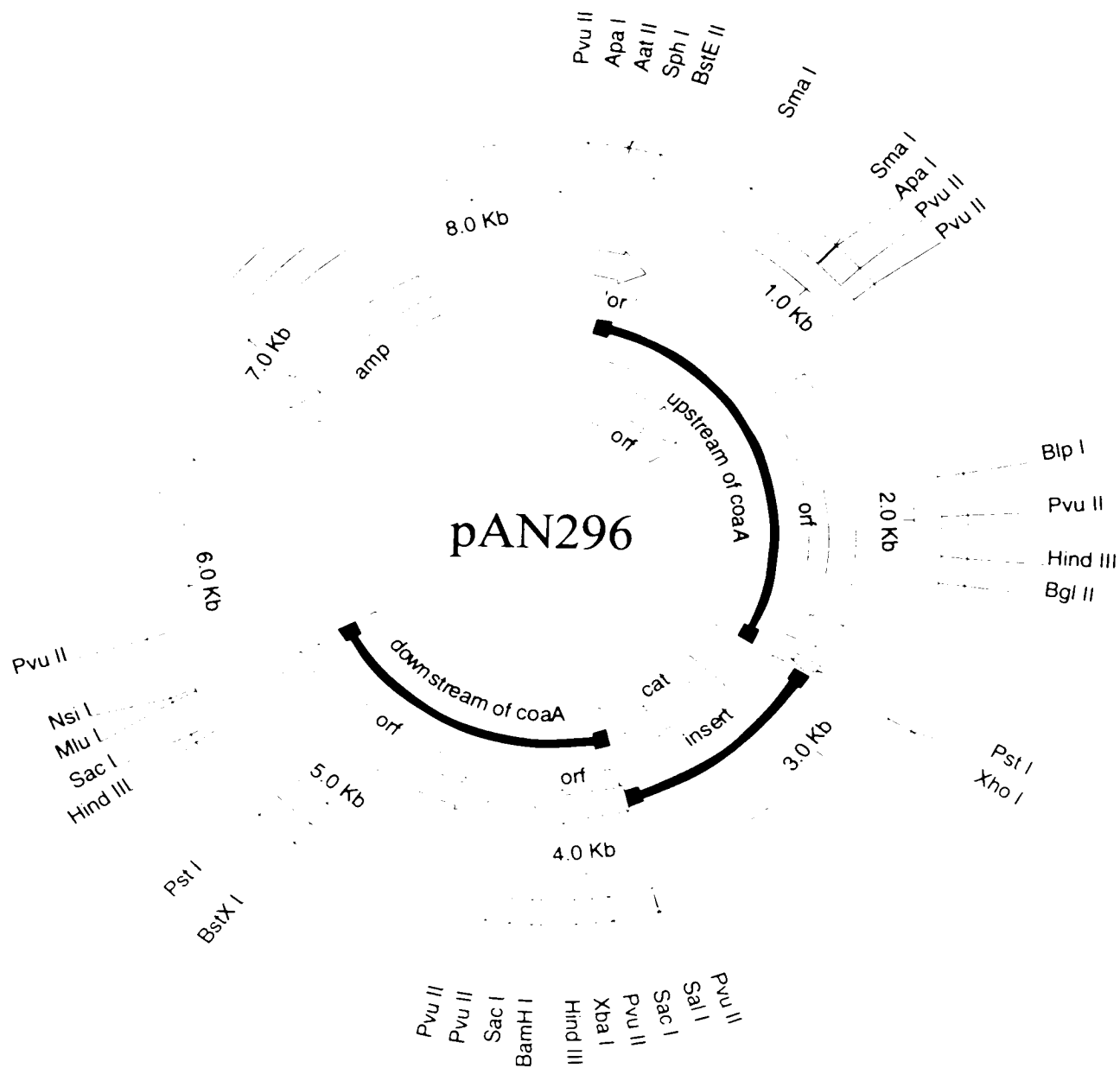


Figure 13 Structure of the *B. subtilis* chromosome in the region of the *coaA* gene. The scale is in base pairs and the significant open reading frames are shown by the open arrows.

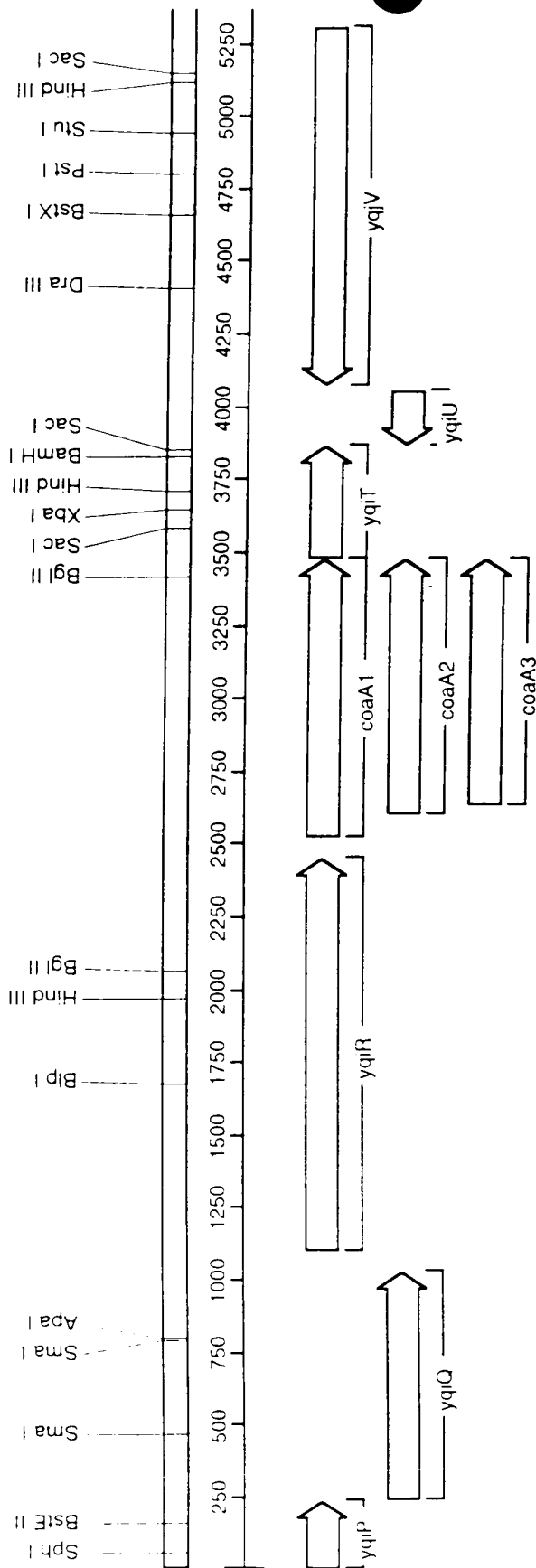
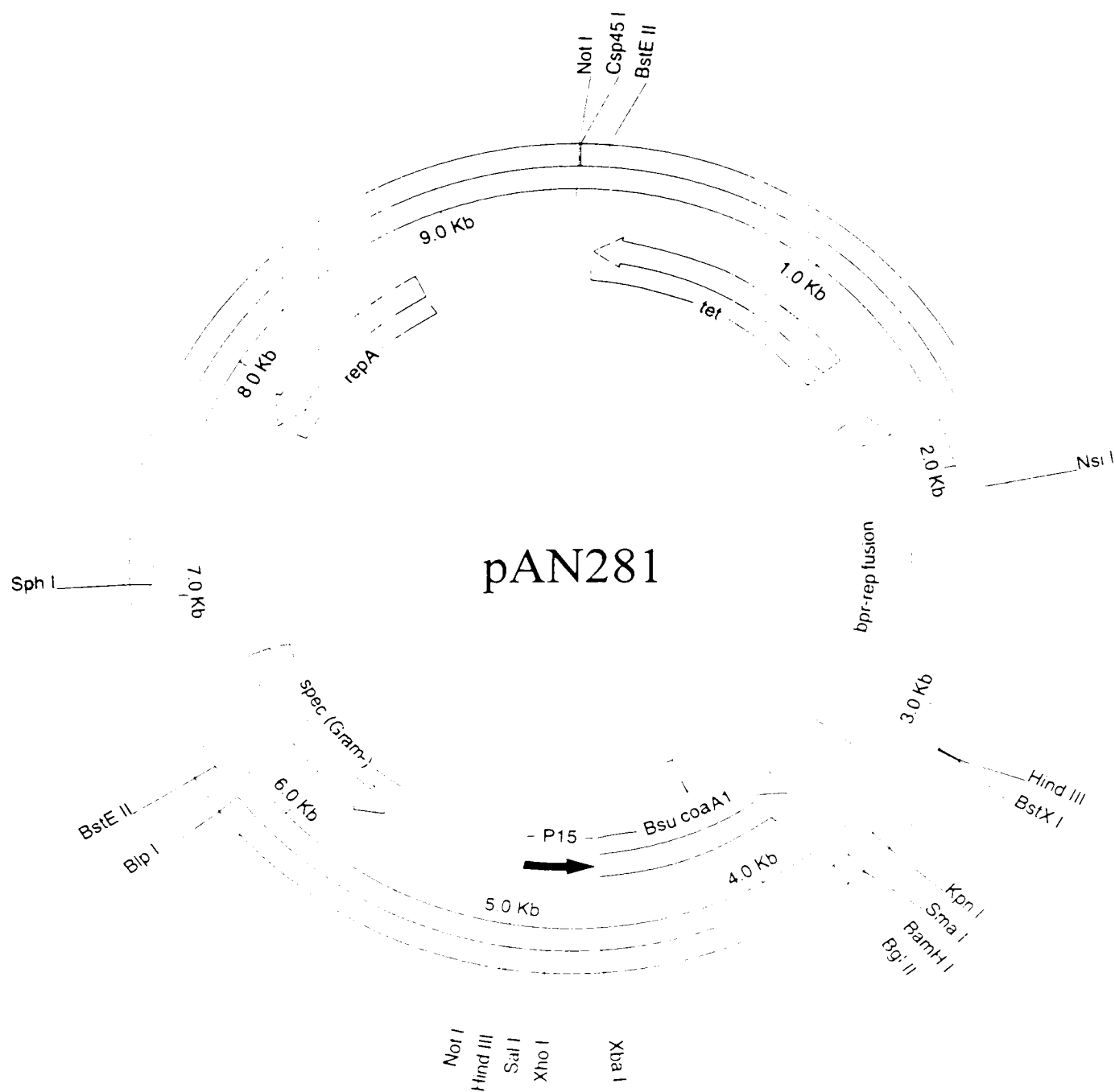


Figure 19 Structure of pAN281, a plasmid for expressing *B. subtilis* *coaA* after integration at the *bpr* locus. pAN282 and pAN283 have similar structures.



[illegible]

The figure consists of 15 small diagrams labeled (a) through (m), arranged vertically. Each diagram depicts a different stage of a butterfly's life cycle:

- (a) A cluster of small, oval eggs attached to a leaf.
- (b) A single egg on a leaf.
- (c) A small, segmented caterpillar (larva) on a leaf.
- (d) A caterpillar with a distinct head and body segments on a leaf.
- (e) A caterpillar with a more developed, segmented body on a leaf.
- (f) A caterpillar with a long, thin, segmented body on a leaf.
- (g) A caterpillar with a very long, thin, segmented body on a leaf.
- (h) A caterpillar with a long, thin, segmented body on a leaf.
- (i) A caterpillar with a long, thin, segmented body on a leaf.
- (j) A caterpillar with a long, thin, segmented body on a leaf.
- (k) A caterpillar with a long, thin, segmented body on a leaf.
- (l) A caterpillar with a long, thin, segmented body on a leaf.
- (m) A small, segmented caterpillar on a leaf.

100

[illegible]

$\mathcal{L}(\mathbf{y}|\mathbf{X}) = \prod_{i=1}^n \mathcal{L}(y_i|\mathbf{X}_i)$

[illegible][illegible][illegible]

The diagram illustrates the experimental setup. A participant is seated at a table, looking at a video screen. A camera is positioned above the screen. A target is placed on the table. A horizontal arrow indicates the direction of movement. A vertical arrow indicates the direction of the video feedback. A horizontal arrow indicates the direction of the video feedback. A vertical arrow indicates the direction of the video feedback. A horizontal arrow indicates the direction of the video feedback. A vertical arrow indicates the direction of the video feedback.

The diagram illustrates the experimental setup. A participant is seated at a table, looking at a video screen. A camera is positioned above the screen. A target is placed on the table. A horizontal arrow indicates the direction of movement from the starting point to the target. A vertical arrow indicates the direction of movement from the starting point to the video screen. A horizontal arrow indicates the direction of movement from the video screen to the target.

100

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were incubated in the presence of 100 mg/ml of gentamicin and 100 mg/ml of rifampicin. The concentration of the *Agrobacterium* suspension was 10⁶ cells/ml. The transformation efficiency was determined by the number of transformants per 10⁶ cells. The data are the mean \pm SD of three independent experiments.

[illegible][illegible]

FIG. 20B

[illegible]

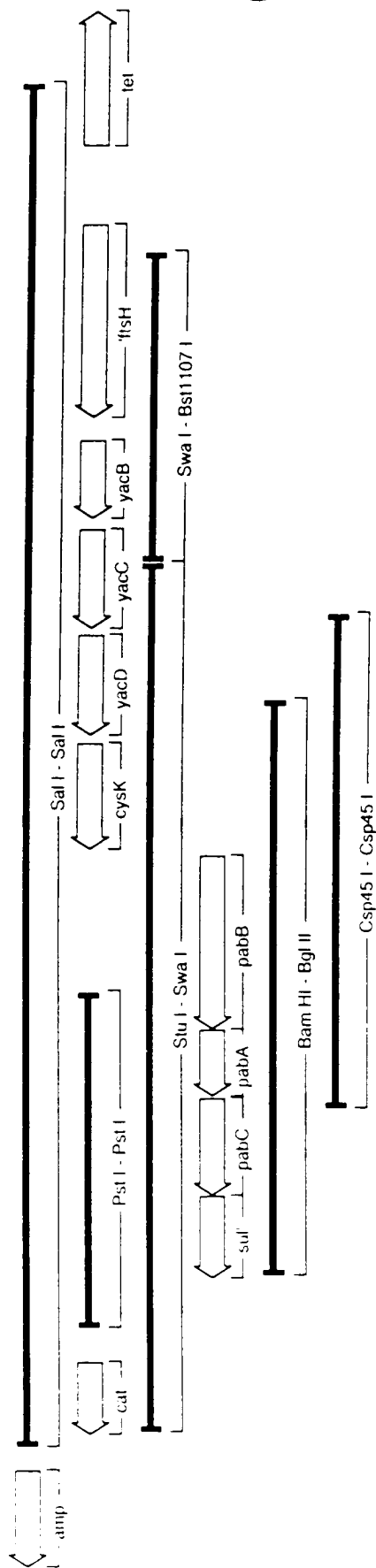


Figure 22 Structure of pAN341 and pAN342, two independent PCR-derived clones of *yacB* (renamed *coaX*).

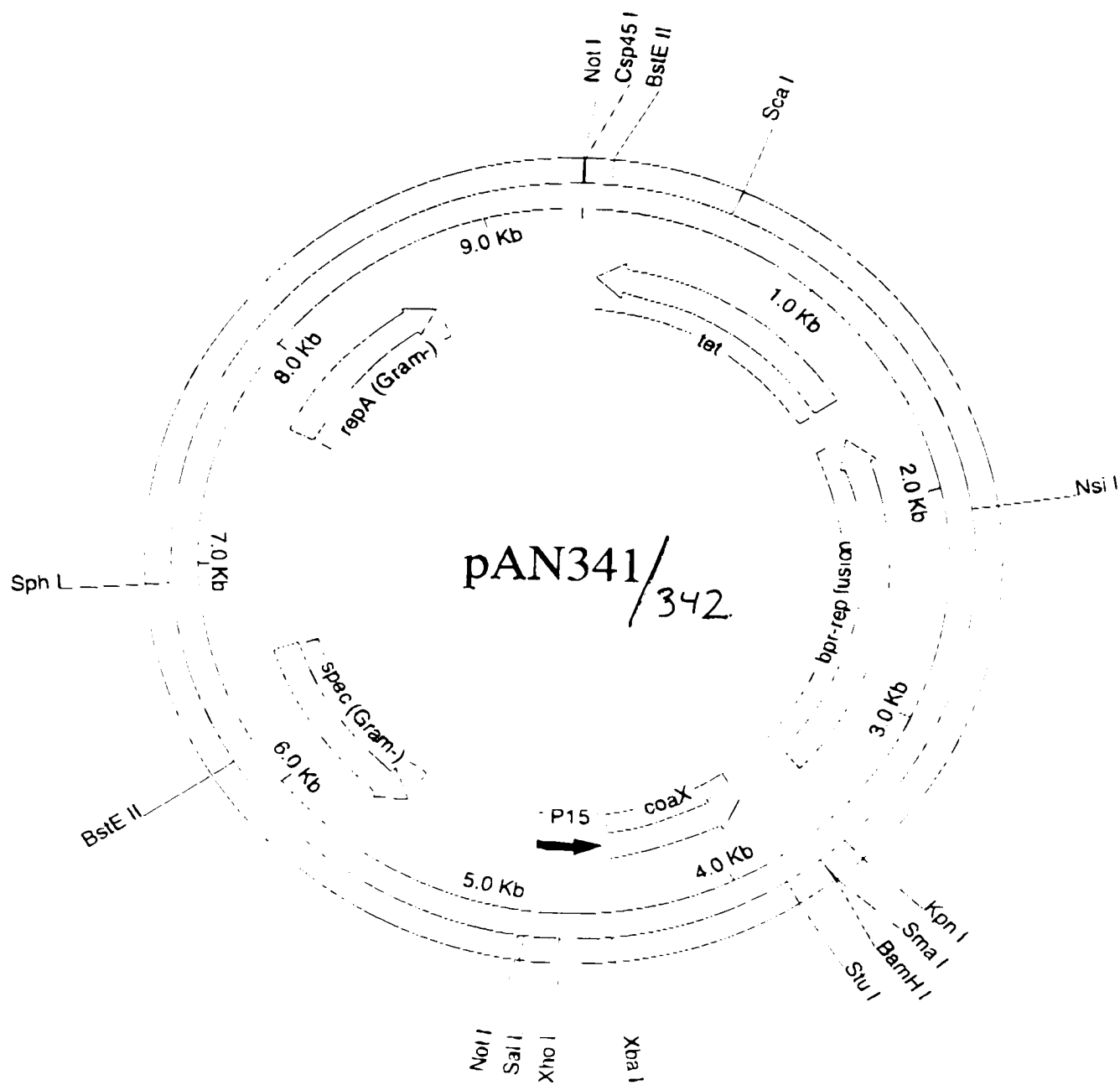


FIG. 23C

[illegible][illegible][illegible]

1. *Phragmites australis* (Cav.) Trin. ex Steud.
 2. *Scirpus americanus* (L.) Pers.
 3. *Eleocharis acicularis* (L.) Rostk Schmidt
 4. *Sagittaria arifolia* (L.) Link.
 5. *Sparganium angustifolium* Michx.
 6. *Alisma plantaginifolia* (L.) Rostk Schmidt
 7. *Alisma ovatum* (L.) Rostk Schmidt
 8. *Alisma subrotundum* (L.) Rostk Schmidt
 9. *Alisma zosterifolia* (L.) Rostk Schmidt
 10. *Alisma verticillatum* (L.) Rostk Schmidt
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FIG. 23D

[illegible][illegible][illegible][illegible]

Figure 24 Alignment of a portion of the amino acid sequences of several known or suspected pantothenate kinases. The residues that are mutated in *E. coli* coaA15(Ts) and *B. subtilis* coaA from plasmid pAN282A are indicated below and above the alignment, respectively. The coordinate given in the left margin for the *B. subtilis* protein refers to the coaA1 open reading frame.

	K	D	N	V	T	A	P	V	Y	S	H	L	I	Y	D	I	I	P	G	A	Majority
168	K	D	S	V	K	A	P	V	Y	S	H	L	T	Y	D	R	E	E	G	V	<i>B. subtilis</i> CoaA1
167	V	P	N	V	T	A	P	V	Y	S	H	L	I	Y	D	V	I	P	D	G	<i>E. coli</i> CoaA
165	K	S	N	V	T	A	P	I	Y	S	H	L	T	Y	D	I	I	P	D	K	<i>H. influenzae</i> CoaA
169	A	D	Y	A	C	A	P	V	Y	S	H	L	R	Y	D	T	I	P	G	A	<i>M. leprae</i> CoaA
169	S	D	Y	A	C	A	P	V	Y	S	H	L	H	Y	D	I	I	P	G	A	<i>M. tuberculosis</i> CoaA
179	K	A	E	V	T	A	P	V	Y	S	H	L	I	Y	D	I	V	P	D	Q	<i>S. coelestis</i> CoaA

Figure 25 Structure of pAN294, a plasmid for integrating mutagenized *B. subtilis* *coaA* at its native locus.

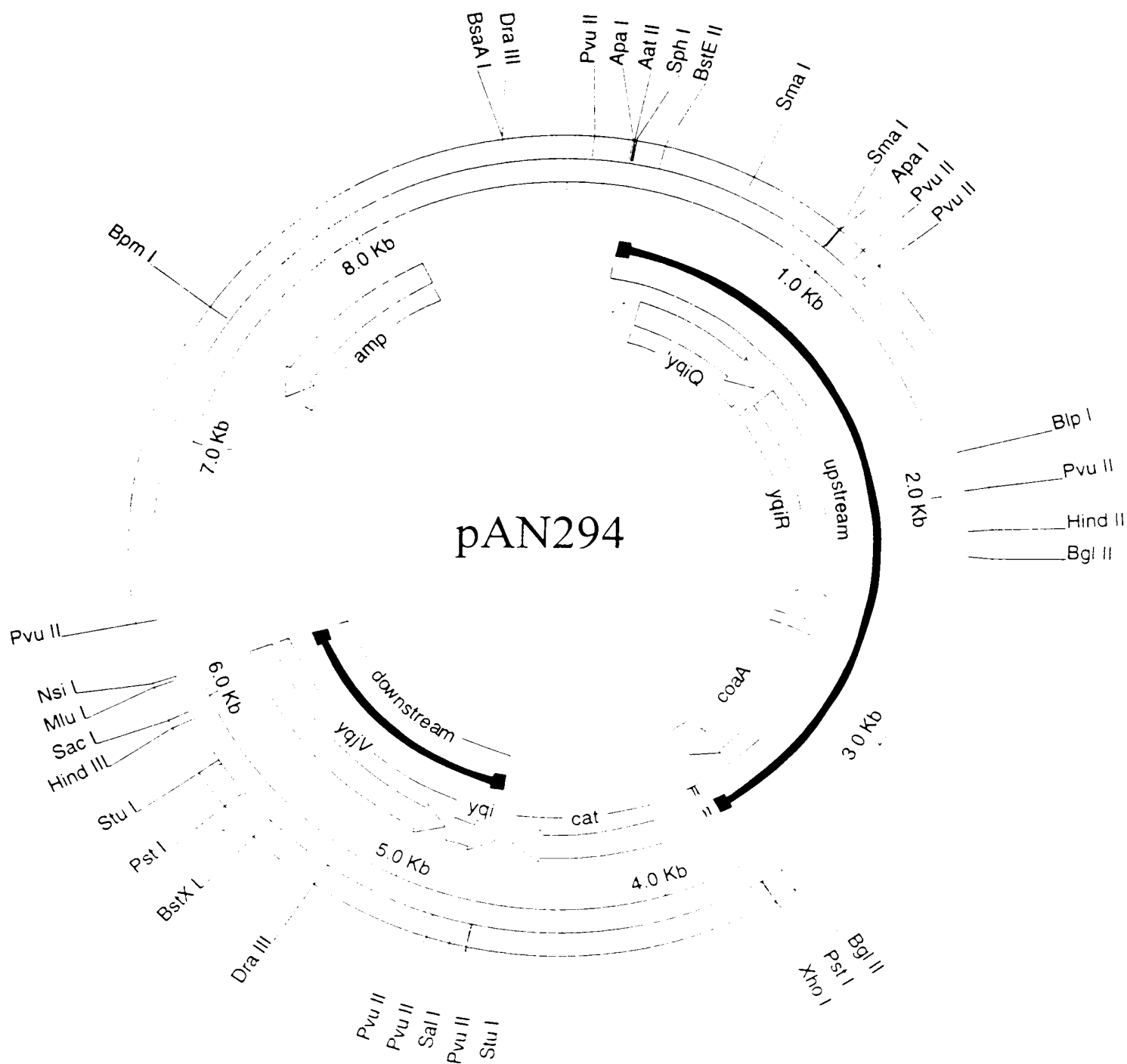


Figure 26 Structure of pAN336, a plasmid designed to delete *B. subtilis* *coaX* from the chromosome and replace it with a kanamycin resistance gene.

